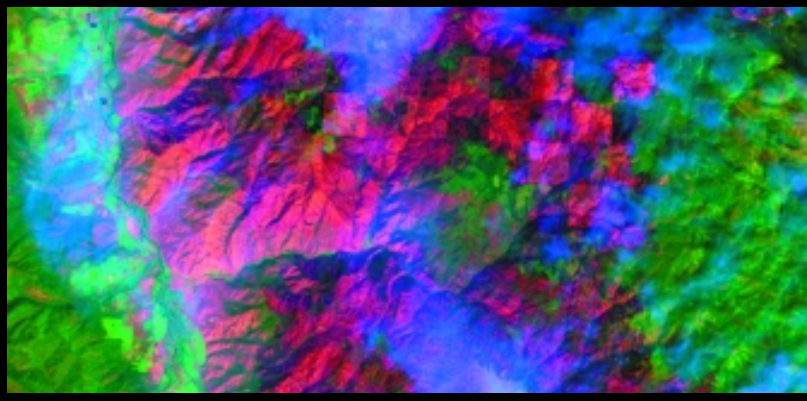
**Goddard Space Flight Center**

# Implementing NASA's *Mission*



# for the *21st Century*

Cover photos

TOP LEFT: Astronauts Claude Nicollier (right) and John Grunsfield (left) are pictured in the clean room in building 29 training for Hubble Servicing Mission 3A .

TOP RIGHT: A Landsat image of the mountains in Montana.

BOTTOM: A high-resolution Hubble Space Telescope composite image of the rings and outflow cone of the Circinus galaxy.

BACKGROUND IMAGE: This Hubble Space Telescope image is of a vast nebula called NGC 604, which lies in the neighboring spiral galaxy M33, located 2.7 million light-years away in the constellation Triangulum.

## Contents



# Goddard's Strategic Implementation Plan 2001

## Center Director's Message

*The first year of the new millennium proved to be a year of outstanding accomplishments for the Goddard Space Flight Center and its partners. Advancement in science and technology is the ultimate objective of the Center's program, and the Center performed admirably. Recent space science activities have led to a greater understanding of solar and interplanetary storms and their effects on the Earth. Discovery of buried channels on Mars add interest to the growing suspicion that Mars may once have had substantial amounts of liquid water and perhaps even an ocean. Achievements such as the discovery of planets around other suns and the detection of organic molecules in interstellar space increase the likelihood that life may exist elsewhere in our galaxy. Altogether, these and the other discoveries are making significant steps forward in addressing key questions regarding our solar system.*

*Earth scientists continue to improve the fidelity of Earth system modeling, and they are making enormous strides in understanding the cause and effect relationships of Earth-system changes in such areas as ozone depletion, global warming, and other climate phenomena. Each set of discoveries sets the stage for the next level of challenges, and Goddard scientists are providing the leadership in defining these new directions.*

*This past fiscal year there were nine spacecraft successfully launched. In space science, the launches of IMAGE and Cluster I and II support the study of the connection between the Sun and the Earth. XMM supports the study of the structure and evolution of the universe. The loss of ASTRO-E, as a result of the launch vehicle failure, takes away the anticipated science results, but it does not diminish the hard work of all those who worked on the instruments and spacecraft. The HST Servicing Mission 3A further demonstrates the Center's flexibility, ingenuity, and agility to respond to critical system issues. Together, these spacecraft place Goddard squarely in the center of pursuing each of the Space Science Enterprise's key scientific themes.*

*In Earth science, we continue to provide outstanding support to NOAA with the launch of GOES-L. NOAA-L is still further evidence of the Center's capabilities to meet customer demands. And with the launch of Terra, we have made a giant step forward in the instrumentation and data required for the Agency's Earth science program.*

*The launch of TDRS-H continues the long line of this series of communications spacecraft and ensures near continuous communications with NASA's orbiting spacecraft. With eight additional spacecraft scheduled for launch in Fiscal Year 2001, there is ample evidence that the Goddard team knows what is required to develop, launch, and operate multiple spacecraft at lower cost, against tight schedules, and achieve maximum performance.*

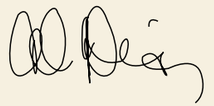
*Altogether, the impact and scope of science emanating from Goddard have never been greater. Coupled with technology advancements in instruments and detectors, in interferometry and optics, in distributed space systems, and in scientific computing, the Center is prepared to meet its current commitments and is positioned to compete successfully for new work in the future.*

*Goddard's people and facilities are the foundation that supports the Center's science, engineering, projects, and support activities. After a very long hiring hiatus, we have begun to replenish our workforce. Coupled with a long-term capital equipment strategy and a new Facilities Master Plan, we continue to put into place the elements that are necessary for long-term success. We also continue to pursue aggressive procurement strategies, and our Integrated Business Plan is helping to integrate strategies and requirements with available resources. Although we still have significant resource challenges, we will continue to maximize results within these limitations and are actively pursuing additional resources to fulfill our mission objectives.*

*Altogether, the Goddard team, the civil service and contractor workforce, our NASA peers, and partners in education and industry should take great pride in these achievements.*

*The publication of Goddard's Strategic Implementation Plan confirms the continuing vision, mission, values, strategies, goals and objectives that we have used as a guide for the past four years. Information on the NASA strategic management structure, the Center's Agency assignments, and Goddard's core capabilities have been added. Together, these Center and Agency planning elements provide the framework on which we will build our programs and actions to address both the Agency and Enterprise Strategic Roadmaps and to guide our performance goals.*

*In the final analysis, the keys to our success are clear: continue to provide science and technology leadership, meet our commitments, and ensure the safety of all those associated with our activities. If we focus on these themes, Goddard will continue to serve as a model research and development organization dedicated to the advancement of scientific knowledge and technology.*



# Vision

## Shared image of the organization's future.

We revolutionize knowledge of the Earth and the universe through scientific discovery from space to enhance life on Earth.

# Mission

## Why Goddard exists: what we do, who our primary customers are, and the principal strategies by which we will operate.

Goddard Space Flight Center enables discovery through leadership in Earth and space science.

We serve the scientific community, inspire the Nation, foster education, and stimulate economic growth.

We partner with others to achieve NASA's goals.

We create technologies that support and advance these endeavors to take full advantage of doing research in space.

We accomplish this through innovation in all that we do.

# Safety

## Commitment to Safety

We will not compromise the safety of the public or our employees in the conduct of our work.

The personal safety and security of all those associated with or potentially affected by Goddard's programs and activities are the cornerstone upon which we build success.

We will be active stewards in the use and protection of all resources and assets that NASA and this nation have entrusted to us.



# Values

## The guiding principles that determine the culture, set the context in which decisions are made, and are the standards for our actions.

***Agility***

Anticipating the future, leading change, and adapting quickly are crucial to thriving in a dynamic environment.

***Balance***

An employee's work life and personal life, including health, family, community involvement, and other interests, contribute to the vitality both of the individual and of the Center.

***Creativity***

Freedom to explore new ideas stimulates discovery, fosters innovation, and leads to more effective ways of doing work.

***Dedication***

Successful results require a commitment to excellence and to individual and team responsibilities.

***Integrity***

Trust, fairness, honesty, and accountability for our actions are the cornerstones of personal and organizational integrity.

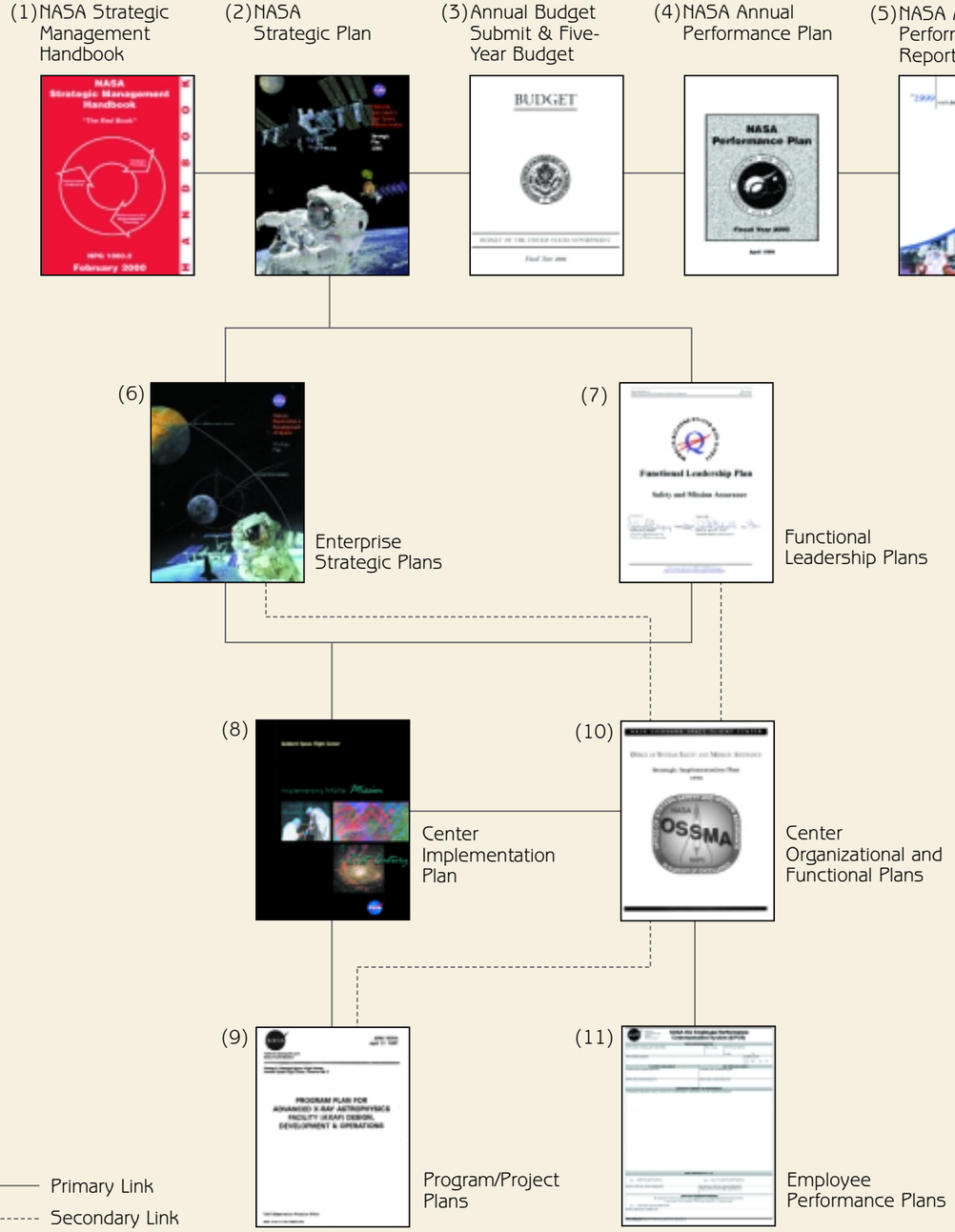
***Respect***

Diversity among people and their ideas is an inherent strength as we work toward fulfilling Goddard's mission.

***Teamwork***

Accomplishments result from successful teams, both internal and external to the Center, that capitalize on the strengths and contributions of every team member.

# NASA's Strategic Management System Documentation




How do you set the strategies and goals of a 14 billion dollar scientific research and development organization? NASA has established the framework represented by the key documents to the left. Key Agency-level documents are available on-line http://www.hq.nasa.gov/office/codez/plans.html

***(1) NASA Strategic Management Handbook*** outlines the overall NASA management structure, the roles and responsibilities of the Centers, and responsibilities for key leadership positions.

***(2) The NASA Strategic Plan*** is required by the Government Performance and Results Act (GPRA). An update is required every 3 years. NASA completed its second such plan in September 2000.

***(3) Annual Budget Submit and Five-Year Budget*** is the culmination of a two-year cycle leading up to the President's budget that is submitted to Congress in January each year. The budget is the translation of NASA's mission, strategies, and goals into specific program budgets and institutional funding.

***(4) NASA Annual Performance Plan***
Each year the Agency submits performance targets for its next year's activities. These are aligned with and submitted with the Agency's budget requests. These Performance Plans are also a requirement of the GPRA.

***(5) NASA Annual Performance Report***
In March following each fiscal year, the Agency reports to Congress and the President on its accomplishments for the prior year, including both specific results from that year's funding as well as accomplishments that have reached maturity during that fiscal year such as scientific findings based on data from satellites launched in previous years. Performance Reports are also a GPRA requirement.

***(6) Enterprise Strategic Plans***
NASA has divided its mission responsibilities into five principal areas. Each of these areas develops a more detailed plan predicated on the mission and strategies of the NASA Strategic Plan. The Enterprise Strategic Plans provide the link between Agency and the Centers. In the NASA 2000 plan, a fifth enterprise, The Biological and Physical Research Enterprise (Code U), was added to the four existing Enterprises: Space Science (Code S), Earth Science (Code Y), Human Exploration and Development of Space (Code M), and Aerospace Technology (Code R).

***(7) Functional Leadership Plans*** provide Agency direction from Headquarters offices that have functional leadership responsibilities.These include:

AE/Chief Engineer
AO/Chief Information Officer
AS/Chief Scientist
B/Chief Financial Officer
C/Headquarters Operations
E/Equal Opportunity Programs
F/Human Resources and Education
G/General Counsel
H/Procurement
I/External Relations
J/Office of Management Systems and Facilities
K/Small & Disadvantaged Business Utilization
L/Legislative Affairs
P/Public Affairs
Q/Safety and Quality Assurance
Z/Policy and Plans

***(8) Center Implementation Plans*** are based upon the Agency, Enterprise, and Functional Leadership Plans. The Center develops a Center Implementation Plant to guide strategy, policy, and resource allocations to accomplish its mission and program/project objectives.

***(9) Program/Project Plans*** define specific goals and performance objectives of Agency/Center commitments.

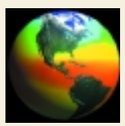
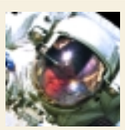
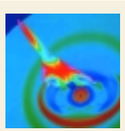
***(10) Center Organizational Plans*** (directorate, division/labs, etc.) are developed through a wide variety of processes and are produced in a wide variety of formats. These plans address specific organizational responsibilities and goals of their respective organizations and principally draw upon the Center's Implementation Plan and secondarily on Enterprise, Program/Project, and Functional Plans.

***(11) Employee Performance Plans***
After all this planning, success depends on the work of our employees. Key aspects of each employee's job assignments are determined by the supervisor and employee and documented in the employee's annual performance plan.

# Summary: NASA High Level Roadmap – Contributions to National Priorities

**Vision** *NASA is an investment in America's future. As explorers, pioneers, and innovators, we boldly expand frontiers in air and space to inspire and serve America and to benefit the quality of life on Earth.*

*Goddard's principal areas of involvement and responsibility are highlighted in blue.*

| Agency Mission | Enterprises | Near-term Plans 2000–2005 | Mid-term Plans 2006–2011 | Long-term Plans 2012–2025 |
|---|---|---|---|---|
|  To advance and communicate scientific knowledge and understanding of Earth, the solar system, and the universe |  **Space Science** | ■ Study structure of collapsed objects and star forming nebulae, fine details of microwave background, early formation of galaxies and of stars, dust in other planetary systems, origins of gamma-ray bursts, and the composition of material between stars.<br>■ Study Saturn, Titan, the composition of comets and asteroids, the orbits of Near-Earth Objects, and the surface and atmosphere of Mars; and return dust and solar wind samples.<br>■ Study the Sun's atmosphere and interior, the interactions between the solar wind and Earth's magnetosphere, and solar coronal mass ejections.<br>■ Develop advanced technologies in areas such as avionics, power sources, optics, bioassay technology, and sample return. | ■ Measure dark-matter, baryon, vacuum-energy densities, and gravitational waves from black holes; determine origin of cosmic rays and the role of active galactic nuclei in gamma-ray background; observe star birth in nebular cocoons; and spectroscopically survey for nearby Earth-like planets.<br>■ Learn about formation of the rocky planets, return a sample from a comet, investigate selected sites on Mars in detail, and search for liquid water ocean on Jupiter's moon Europa.<br>■ Expand understanding of space weather through solar, radiation belt, and ionospheric mappers. Study the detailed physics and structure of our magnetosphere and the outer solar atmosphere, and globally monitor the Sun.<br>■ Infuse revolutionary technologies into operational missions. | ■ Resolve the infrared background and an accretion disk around the Milky Way black hole; measure the chemical composition of supernovas and the gas outside our solar system; and determine the prevalence of life-bearing planets around nearby stars.<br>■ Fly by Pluto and study Neptune and its satellite Triton. Search for evidence of biological activity on Europa, Titan, and other promising targets. Conduct advanced studies of Mars.<br>■ Complete our picture of the solar corona and develop an integrated understanding of space weather from a network of spacecraft.<br>■ Reap benefits of technology investment, including biological, information, and nanotechnology systems, enabling a virtual presence for autonomous scientific discovery. |
|  To advance human exploration, use, and development of space |  **Earth Science** | ■ Measure global rainfall, uptake of atmospheric carbon dioxide ($CO_2$), atmospheric temperature and humidity, cloud properties, global ocean winds, and topography; and produce 3-D maps of the entire inhabited surface of the Earth. Expand use of commercial systems in collecting data.<br>■ Employ high-performance computing to address Earth system modeling challenges; validate revolutionary technologies and satellite formation flying; and explore new instrument concepts. | ■ Conduct research to achieve 7- to 10-day weather forecasts. Quantify the global fresh water cycle, variation in terrestrial and marine ecosystems, and forest and ocean carbon stocks. Assimilate ocean surface winds, tropospheric winds, and precipitation into climate and weather forecasting models.<br>■ Employ distributed computing and data mining techniques for Earth system modeling, implement autonomous satellite control and advanced instruments, and demonstrate a new generation of small instruments. | ■ Conduct research to achieve 10- to 14-day weather and pollution forecasts, 10-year climate forecasts, 15- to 20-month El Niño forecasts, and 12-month rain rate. Assess sea-level rise and effects and predict regional impacts of decadal climate change.<br>■ Deploy cooperative satellite constellations, intelligent sensor webs, and advanced instruments for observations from liberation points (L1 and L2). |
|  To research, develop, verify, and transfer advanced aeronautics, space, and related technologies |  **Biological and Physical Research** | ■ Identify mechanisms of health risk and potential physiological and psychological problems to humans living and working in space, and begin developing and testing countermeasures.<br>■ Begin to conduct scientific and engineering research, and enable commercial research activities on the International Space Station (ISS). | ■ Understand the effects of long-duration space flight (e.g. radiation, gravity), validate countermeasures and technology, and begin developing countermeasures for long-duration space flight.<br>■ Test and validate technologies that can reduce the overall mass of human support systems by a factor of three (compared to 1990's levels).<br>■ Extend our understanding of chemical, biological, and physical systems. | ■ Apply and refine countermeasures for safe, effective, and affordable long-duration human space flight.<br>■ Test and validate technologies for self-sustaining life support systems that can enable humans to live and work in space and on other planets.<br>■ Achieve a deep understanding of the role of gravity in complex chemical, biological, and physical processes. |
| |  **Human Exploration and Development of Space** | ■ Obtain key data for human mission design decisions from robotic science missions and develop technologies, interdisciplinary knowledge, and candidate approaches for human missions beyond Low-Earth Orbit (LEO) with a 5- to 10-fold reduction in costs.<br>■ Complete ISS development to enable long-duration research.<br>■ Create new approaches to collaborative partnerships with the private sector for the development of future human space exploration capabilities. | ■ Establish robotic/engineering "outposts" at key sites and develop technologies and capabilities for 100-day human missions beyond LEO. Develop approaches to 1000-day missions with 10- to 20-fold cost reductions.<br>■ Complete research and technology validation (including ISS demos) of competing technologies for 100- to1000-day human missions.<br>■ Operate the ISS to advance science, exploration, engineering, and commerce.<br>■ Undertake pilot efforts leading to commercialization of ISS operations. | ■ Conduct research and development to enable a further 2- to 4-fold reduction in costs for human exploration and complete development of safe, self-sufficient and self-sustaining capabilities for 1000-day class human-robotic missions beyond LEO.<br>■ Complete the transition of ISS to a customer-driven and commercial operation.<br>■ Extend scientific discovery on missions of exploration through the integrated use of human and robotic explorers. |
| |  **Aerospace Technology** | ■ Develop and demonstrate technologies to reduce the aviation accident rate, aircraft emissions, and noise. Improve terminal area productivity, support the Federal Aviation Administration's National Airspace System modernization, and develop technologies for general aviation aircraft and infrastructure improvements.<br>■ Develop processes and technology improvements to support safer crewed launches and reduced cost of launches, and develop advanced space transportation concepts.<br>■ Develop advanced engineering tools, processes, and design environments, and pioneer basic research in revolutionary technologies such as nanotechnology, information technology, and biotechnology. | ■ Reduce the aircraft fatal accident rate by 80%, nitrogen oxide (NOX) emissions by a factor of 3, carbon dioxide ($CO_2$) emissions by 25%, and aircraft noise by a factor of 2. Double aviation system throughput and reduce inter-city doorstep-to-destination transportation time by 50% and explore integrated supersonic transport designs.<br>■ Reduce the risk of launch vehicle crew loss by a factor of 40, payload cost to LEO by a factor of 5, and travel time for planetary missions by a factor of 2.<br>■ Demonstrate advanced design tools, processes, and virtual environments in critical NASA engineering applications and integrate revolutionary aerospace system technologies. | ■ Reduce the aircraft fatal accident rate by a 90%, NOX emissions by a factor of 5, CO2 emissions by 50%, and aircraft noise by a factor of 4. Triple aviation system throughput and reduce inter-city doorstep-to-destination transportation time by 67% and long-haul travel time by 50%.<br>■ Reduce the risk of launch vehicle crew loss by an additional factor of 10, payload cost to LEO by a factor of 10, and travel time for planetary missions by a factor of 10.<br>■ Demonstrate an integrated, high-confidence engineering environment and demonstrate new aerospace capabilities and new mission concepts in flight. |

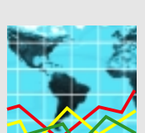
**Contributions to National Priorities**


*Increase the Understanding of Science and Technology*


*Protect the Environment*


*Create Education Excellence*


*Peaceful Exploration and Discovery*


*Economic Growth and Security*

***Note:***
This is a high-level summary of 25-year plans toward achievement of Enterprise goals and objectives.

For further information, refer to the *National Aeronautics and Space Administration: Strategic Plan 2000*

# Goddard's Agency Designated Responsibilities

*NASA roles and responsibilities assigned to the Goddard Space Flight Center as of 2-1-01—Current listings are updated online in NPG 1000.2, the NASA Strategic Management Handbook.*

***Goddard's "Mission Areas" are Earth Science, Environment and Health Research, and Physics and Astronomy. In addition, Goddard is an Agency-designated "Center of Excellence" for Earth Science and for Physics and Astronomy.***

***Center Missions*** identify the primary area of concentration of each Center's capabilities. A Center mission is a long-term responsibility. The Center Directors are responsible for building and maintaining human and physical resources to support their Center's mission.

When a Center's Mission represents exceptional Agency capabilities in certain areas of science, engineering, or technology, it is designated a ***Center of Excellence.***

Centers of Excellence are expected to serve the needs of the Enterprises as well as NASA's strategic objectives. A NASA Center designated as a Center of Excellence is responsible for planning and, as permitted by available resources, maintaining and augmenting the personnel skills, facilities, and tools required to sustain its area of excellence.

## Principal Center Designation

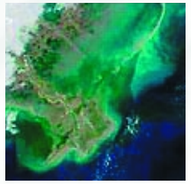
A Principal Center designation is made when a Headquarters Functional Office assigns leadership to a Center for a particular functional operation. The scope and responsibilities are negotiated and documented through a memorandum of understanding.

Goddard's Areas of Functional Responsibility and Headquarters Functional Leads are:

- Printing Management and Forms and Mail Officer Functions
  GSFC and HQ Code AO/Chief Information Officer
- Outsourcing Desktop Initiative for NASA (ODIN)
  GSFC and the HQ Code AO/Chief Information Officer
- Integrated Financial Management (IFM) System Contract Management
  GSFC and HQ Code B/Office of the Chief Financial Officer
- NASA Online Directives Information System (NODIS)
  GSFC and HQ Code JM/Management Assessment Division
- Agency-wide Travel Services Contract/Oversight
  GSFC and HQ Code JG/Logistics Management
- Processing Wage Determinations
  GSFC and HQ Code JR/Industrial Relations Officer

## Lead Center Program Assignments

The Lead Center has full program management and authority and is fully accountable for ensuring that assigned programs are managed to agreed-on schedules, budgets, technical requirements and all safety and reliability standards. GSFC's Lead Center assignments are:



### *Earth Science*

- Earth Science Operations
- Earth Observing Systems—Atmospheric Physics and Land Surfaces
- Earth Explorers
- Earth Science Technology Program
- Geostationary Operational Environmental Satellites (GOES)
- Polar Operational Environmental Satellites (POES)
- New Millennium Program EO-1

### *Aero-Space Technology*

- Small Business Innovation Research/Small Business Technology Transfer Program Space Science

### *Space Science*

- Hubble Space Telescope: Program Center
- Explorers Program
- Near Earth and Earth-Orbiting Space Science Mission Operations
- International Collaboration on Non-U.S. Physics and Astronomy Missions

*PHOTO TOP: This image of the Mississippi Delta is one of the first scenes acquired by the Moderate Resolution Imaging Spectroradiometer (MODIS) on the EOS/Terra Spacecraft.*

*PHOTO ABOVE: Hubble observed this majestic spiral galaxy, known as NGC 4414, as part of a key astronomical mission to accurately determine distances from Earth of many galaxies.*

*PHOTOS RIGHT: The people and facilities at Goddard form the foundation upon which the Center's science, engineering, projects, and administrative accomplishments are built.*



# Mission and New Business Strategy

*Ongoing work and new initiatives at Goddard Space Flight Center should all be aligned with the Center's mission. These questions provide guidance for determining new Center initiatives and for determining the scope of existing work.*

## Relevance

- Is this work in alignment with the NASA Strategic Plan and the Enterprise Strategic Plans that Goddard supports?
- Does this work help achieve the vision and the mission of the Center?
- Is this work included in one of the Center's designated areas of responsibility?
- Does the work maintain the appropriate balance between near-term goals (up to 10 years) and the work necessary to meet the grand scientific challenges that are a decade or more in the future?

## Center Capabilities

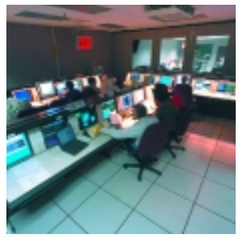
- Does the Center offer a unique capability to support this work and to deliver the required product, and is there no other better source from which to obtain it?
- Does the work sustain or enhance the Center's core competencies?
- Does Goddard have a leadership role in this kind of work, and are there few outside sources that can support it?
- Is it the kind of high-risk, state-of-the-art work the Center should be pursuing?
- Does the capability to do the work position the Center to obtain future work in alignment with Goddard's mission and this Implementation Plan?

## Resources

- Are institutional resources, for example, personnel, facilities, and equipment, available within Goddard or with partners to perform this work in a cost-effective manner?
- Is the new work the most cost-effective option for accomplishing the goal within schedule and with a high probability of success?
- Will the work have a sufficient and timely budget to be self-sufficient and meet schedule requirements?
- Will partnerships or other funding options reduce NASA's funding requirements?

## Assignment

- Has this work been assigned to Goddard by the Agency?



# Project Goddard: Necessary Elements for Fulfilling Customer Expectations

Since the Center first published its Strategic Implementation Plan in 1997, the Agency has continued to develop the structure by which the Agency manages itself, and, more importantly, out of this has come the strategic and operational goals and objectives to define programs and make resource allocations.

The Center in turn has continued to use the Strategic Implementation Plan (SIP) to guide the Center's strategy with Project Goddard as the vehicle to implement key strategies. Foremost among these are to assure that the Center has:

Challenging scientific and engineering work with sufficient in-house activity to assure the maintenance of core competencies that are the prerequisites for mission safety and success;

A sustainable workload that supports timely revitalization of the workforce, facilities and equipment and allows the achievement of balance in employees' lives; and

A culture that sustains the values of "integrity" and "dedication" that are at the core of the Center's tradition; a culture that embraces the values required for future success including greater flexibility in dealing with rapidly changing customer requirements and expectations as well as with the needs of a changing workforce; and a culture that supports a "balance" between work and personal life and supports "respect" for diversity of people and ideas.

As part of Project Goddard, we have also developed an Integrated Business Plan whose objective is to align the various resource decision-making processes at the Center so that they are better able to support the Center's mission. The Integrated Business Plan directly influences allocations of workforce for program formulation and implementation, creates tradeoffs for the pursuit of various technology developments and new business opportunities, and determines capital investments and overall workforce strategies.

## Core Processes

*Key Processes we implement to meet customer needs.*

***Science Enabling***
Processes associated with the acquisition and conduct of scientific research in support of the Earth Science and Space Science Enterprises. They encompass the span of activities from the definition of scientific objectives, to the identification of data requirements, through the acquisition, dissemination and analysis of data, and to the creation and communication of scientific knowledge.

***Technology Development***
Processes associated with the development of technologies that support the needs of the Earth Science, Space Science, and Human Exploration and Development of Space Enterprises. This process includes both the creation of new technology and the innovative use of existing technologies to enable the Center's scientific missions.

***Systems Development***
Processes associated with the development of flight and ground systems to support the Earth Science, Space Science, and Human Exploration and Development of Space Enterprises. These span the ground and space-based hardware and software required for instruments, spacecraft, launch, operations, and information management.

***Program/Project Management***
Processes associated with the management of programs and projects throughout their life cycle. These include the technical, resource, and schedule requirements from concept through completion of the defined program/project objectives.

***Communicate Knowledge***
Processes associated with communicating the knowledge acquired by NASA/GSFC to educators, academia, industry, and the general public. These include both technical and layman's understanding and the scientific and practical implications of knowledge developed as a result of GSFC's mission.

## Core Competencies

*Capabilities in which we must excel and that must reside within the Goddard civil servant workforce and facilities if we are to achieve our mission. In determining our core competencies, we have established ground rules to guide the establishment and maintenance of these competencies. Goddard will have a core competency in a particular area (1) if the capability is necessary in fulfilling Goddard's mission and does not readily exist elsewhere; (2) if it is necessary for Goddard's support to NASA's mission and Goddard is the best source; (3) or if the breadth and/or depth of a capability is essential to Goddard's ability to meet customer requirements.*

***Science: Experimental and Theoretical***
Competency in areas of research for which Goddard has a designated leadership responsibility or which Goddard, consistent with its mission responsibilities, has elected to pursue as an area of strategic importance to the Center.

***Sensors and Instruments and Associated Technologies***
Competency associated with advancing state-of-the-art in detectors, instruments and associate technologies (e.g., optics, cryogenics) used in the conduct of space and Earth science.

***End-To-End Mission Systems Engineering***
Competency in the full suite of engineering skills required to lead implementation of full mission systems.

***Advanced Flight and Ground Systems Development***
Competency associated with advancing state-of-the-art in flight and ground systems for which Goddard has designated leadership responsibility, or for which, Goddard, consistent with its mission, has elected to pursue as an area of strategic importance for the Center and the Agency.

***Large Scale Scientific Information Systems***
Competency in the scientific modeling and computer/information systems design skills required to implement and utilize large scale scientific computation and information systems.

***Program/Project Management***
Competence in the full suite of management, technical and administrative skills required to manage programs and projects.

***Independent Verification and Validation of Systems and Software***
Competency in assessing software development processes and products to increase software safety and quality, reduce costs, and facilitate on-time delivery.

## Core Technology Competencies

- *High Sensitivity Detector Systems*
- *Large Aperture Observatory Systems*
- *Distributed Observing Systems/Constellations*
- *Flight and Science Information Systems*

## Essential Services

*Day-to-day services required for us to implement our mission.*

***Safety and Mission Assurance***
Services associated with maintaining personal safety of the employees and others who could be potentially affected by Goddard's programs or activities and in maintaining systems safety and mission assurance associated with Goddard programs and projects.

***Human Resources***
Services associated with the employment, career development and training of Goddard civil service employees.

***Institutional Management***
Services associated with managing Goddard's institutional infrastructure.

***Financial and Resource Management***
Services associated with managing Goddard's fiscal and physical resources.

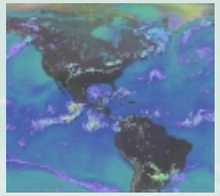
***Procurement***
Services associated with Goddard's acquisition of goods and services.

***Legal***
Services associated with providing Goddard management and employees legal counsel to help assure they conduct their work in accordance with laws and regulations, with representing Goddard in litigation, and with conducting Goddard's ethics program.

# Program Goals, Strategies, and Objectives

## Implementation Plan: Program Goals 1-3

***Six Centerwide goals and supporting strategies guide Goddard in fulfilling its mission and responsibilities as assigned by NASA. These goals and strategies link together with the NASA Strategic Plan, Enterprise Plans, and the Agency Performance Plan to form the framework for the Center's annual goals, performance targets, and actions.***



*Tropical Rainfall Measuring Mission (TRMM) image of the Western hemisphere.*



### *Goal 1 To serve as a national resource for discovery in Earth and space science and technology development.*

#### *Strategy 1:*

Provide customer-centered leadership to implement the goals of NASA's Space Science and Earth Science Enterprises.

***Objective 1:***
To work in partnership with NASA Headquarters and the scientific community to define the goals and essential measurements for addressing the next generation of Earth and space science questions.

***Objective 2:***
To establish partnerships with industry, academia, and the international scientific community in order to concentrate the best available resources on doing the science and developing the technology that will lead to new discoveries.

***Objective 3:***
To make data and new knowledge widely accessible to the scientific community.

#### *Strategy 2:*

Use the Center's capabilities to support the Nation's science and technology goals by focusing on those roles it is uniquely able to perform as a Federal laboratory.

***Objective 1:***

To provide increased opportunities for scientists to make new measurements by increasing flight opportunities across a wide range of instrument platforms.

***Objective 2:***
To perform the long-term scientific and technological research that makes breakthrough discoveries possible.

***Objective 3:***
To provide access to the Center's institutional capabilities, including facilities, equipment, and expertise in science, technology, and project management in order to support and build the abilities of the scientific and supporting technical communities.

***Objective 4:***
To transfer new knowledge and technology to industry.

### *Goal 2 To be an international Center of Excellence for research in Earth science, space science, and technology.*

#### *Strategy 1:*

Create and sustain a creative, outward-focused environment that encourages the interchange of ideas.

***Objective 1:***
To establish value-added partnerships and collaborations in order to optimize capabilities to achieve the Center's mission.

***Objective 2***
To systematically assess the quality and value of Goddard's contributions in research and leadership through customer, peer, and other external input and to use the results of these assessments to target areas for improvement.

#### *Strategy 2:*

Ensure that the Center has the resources, experience, competence, and capabilities to perform world-class science, technology development, and engineering in its core areas of responsibility.

***Objective 1:***
To assemble and sustain the best possible workforce of scientists, engineers, and technologists.

***Objective 2:***
To provide the state-of-the-art facilities and equipment it takes to perform cutting-edge research.

***Objective 3:***
To advance the Center's research capabilities through challenging, hands-on work.

#### *Strategy 3:*

Use the Center's expertise in program leadership and project management to set the benchmarks for mission, schedule, and cost performance in meeting customer requirements.

***Objective 1:***
To perform cutting-edge research and development of instruments, spacecraft, ground-support technologies, and information management systems to conduct science missions with increased performance at reduced cost.

***Objective 2:***
To accept the responsibilities and risks of infusing cutting-edge technologies.

***Objective 3:***
To employ innovative practices in program and project management.

### *Goal 3 To enhance the Nation's technological and scientific literacy by sharing the information and knowledge that result from the performance of Goddard's mission.*

#### *Strategy 1:*

Use the full scope of the Center's capabilities to communicate the content, relevance, and excitement of scientific and technical knowledge and discovery to the education community and to the public at large.

***Objective 1:***
To develop Center capabilities to communicate Goddard's mission activities and results.

***Objective 2***
To provide employees with the guidance, resources, opportunities, and incentives to be active and effective in sharing knowledge and discoveries.

***Objective 3***
To make specific education and public information initiatives part of each science and technology program.

***Objective 4***
To create wide-ranging partnerships to broaden the scope of the Center's communication initiatives.

#### *Strategy 2:*

While working within NASA's Education Strategic Plan, address the needs of the education community by translating the Center's science, engineering, mathematics, and technology knowledge for use with the national education standards for curriculum support, faculty enhancement, student support, and technology applications.

***Objective 1:***
To work with external organizations and partners to develop educational programs and products that contribute to a systemic approach in meeting national education standards.

***Objective 2:***
To develop broad-based education programs aimed at raising scientific and technical understanding at all education levels.

#### *Strategy 3:*

Explain the nature and convey the excitement and relevance of NASA's mission and Goddard's contributions to scientific discoveries and technology developments to the public in a manner appropriate to each audience.

***Objective 1:***
To provide easy public and media access to mission information.

***Objective 2:***
To partner with others in the science and aerospace communities to develop a coherent picture of the role of science and technology in society today and in the future.

# Implementation Plan: Program Goals 4-6

*The Terra spacecraft launches into space as part of NASA's Earth Observing System mission assigned to study planet Earth.*

## Goal 4 To accomplish the Center's mission through a vital and effective workforce.

### Strategy 1:

Ensure that all employees understand Goddard's values, their individual roles and contributions in achieving the Center's goals, and the way their work fits into NASA's overall mission and helps meet the Agency's performance goals.

***Objective 1:***
To communicate the purpose and content of NASA and Enterprise strategic plans and the Center's Strategic Implementation Plan to each employee.

***Objective 2***
To involve every employee in developing work plans to fulfill the Center's mission.

### Strategy 2:

Involve employees in the creation of a work environment conducive to their best performance according to the Center's values and goals.

***Objective 1:***
To foster an organizational climate where employee diversity and mutual respect are catalysts for creativity and team effectiveness.

***Objective 2:***
To align reward, recognition, and performance systems with the Center's values and goals.

***Objective 3***
To provide both employees and managers work time and opportunities for appropriate training, improving work processes, and performing outreach activities.

### Strategy 3:

Acquire and sustain a vital and effective workforce.

***Objective 1:***
To recruit the best employees while maintaining balance in the experience levels of new hires and enhancing the Center's diversity.

***Objective 2:***
To make a commitment of management and resources to ensure that employees receive the training, developmental experiences, and tools they need to attain the highest levels of professional excellence and personal growth in order to perform the Center's mission.

***Objective 3:***
To create a climate that provides employees the opportunity to maintain a productive balance between personal and professional responsibilities.

## Goal 5 To maintain and upgrade Goddard's core infrastructure, laboratory facilities, and equipment to preserve the Center's preeminence as a national resource and Center of Excellence.

### Strategy 1:

Focus facility resources on those capabilities that contribute the most toward meeting Goddard's goals as a national resource and Center of Excellence.

***Objective 1:***
To define the facility requirements and acquire the resources needed to enhance Goddard's state-of-the-art capabilities.

***Objective 2***
To reduce the Center's overall infrastructure costs by closing excess facilities or by converting them to other uses.

***Objective 3***
To use external facilities when they have capabilities that are not currently available at Goddard or when they provide a cost-effective alternative.

### Strategy 2:

Maximize productivity by providing employees with the tools and equipment they need to do their best work.

***Objective 1:***
To budget for and acquire the necessary tools and equipment to improve productivity.

***Objective 2:***
To reduce costs and development time by using off-the-shelf products where appropriate.

## Goal 6 To organize science, technology, flight mission, and business processes to achieve greater productivity.

### Strategy 1:

Create an effective organization for carrying out the Center's science and technology mission.

***Objective 1:***
To eliminate non-value-added activities from functions and organizational units.

### Strategy 2:

Systematically improve the Center's work processes.

***Objective 1:***
To identify, prioritize, and streamline the Center's core science, engineering, project management, and quality processes.

***Objective 2:***
To identify, prioritize, and streamline the Center's human resource and business processes.

### Strategy 3:

Create a management and full-cost information structure to facilitate strategic management of programs, processes, and resources.

***Objective 1:***
To provide new business opportunities that provide high-quality work in Earth science, space science, and technology.

***Objective 2:***
To establish near- and long-term overhead targets for reducing infrastructure costs.

***Objective 3:***
To align and integrate operational, institutional, technical, and scientific activities with NASA planning and budget cycles.

# Location of Key Reference Materials

### *NASA Homepage*

http://www.nasa.gov/

provides up-to-date news on NASA's programs and activities, as well as a link to the various Enterprise homepages.

### *Office of Policy and Plans*

http://www.hq.nasa.gov/office/codez/plans.html

is a library of current and past NASA and center strategic plans, NASA Performance Plans, Performance Reports, and related documents.

### *Office of the Chief Financial Officer*

http://ifmp.nasa.gov/codeb/library/library.htm

is a compendium of NASA budget information and documentation.

### *Goddard Space Flight Center Public Homepage*

http://www.gsfc.nasa.gov/

is a source of general information about Goddard, its mission, and links to other NASA websites.

### *Goddard Space Flight Center Internal Homepage*

http://internal.gsfc.nasa.gov/

is the intranet starting point to Goddard information and documentation. Click on Reports and Plans for documents related to the Center's planning activities.

### *Destination Earth*

http://www.earth.nasa.gov/missions/index.html

is the website for NASA's Earth Science Enterprise and provides a direct link to the web pages of major projects in development and operation.

### *Space Science*

http://spacescience.nasa.gov/

is the website for NASA's Space Science Enterprise and provides a direct link to "Our Missions," which provides a link to web pages for space science projects.

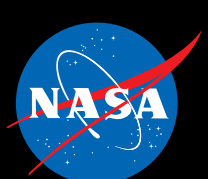
### *NASA Technology Plan*

http://technologyplan.nasa.gov

is a source document for NASA's technology strategies.

*Opposite page*
*The MISR instrument on the EOS/Terra spacecraft captured this satellite image of the Mid-Atlantic Region.*

NP-2001-5-243-GSFC




National Aeronautics and
Space Administration

**Goddard Space Flight Center**